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(58) Field of search

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## (54) Tool for clinching U-shaped clips

(57) The tool comprises two parallel side plate members (1) forming a body which has a pivot (11) at one end about which two hand operable members (6,7) are movable. The members (6,7) are coupled via linkages (5,5a) with a movable jaw member (20) having an end (25) which cooperates with a fixed jaw member (24). A magazine (19) is provided to hold a stack of U-shaped clips with a clip being fed to the movable jaw member (20) by spring bias when the movable jaw (20) is fully retracted.

Bringing the members (6 and 7) together by application of manual force the jaws (20,24) are closed thereby to effect a clinching operation on the clip around two parallel wires.

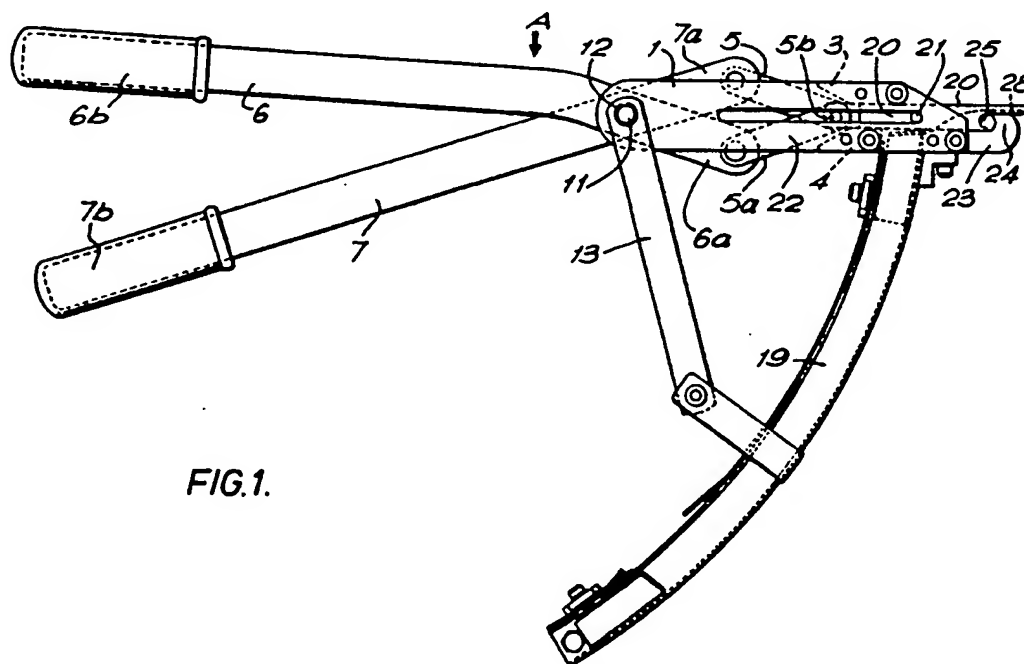


FIG.1.

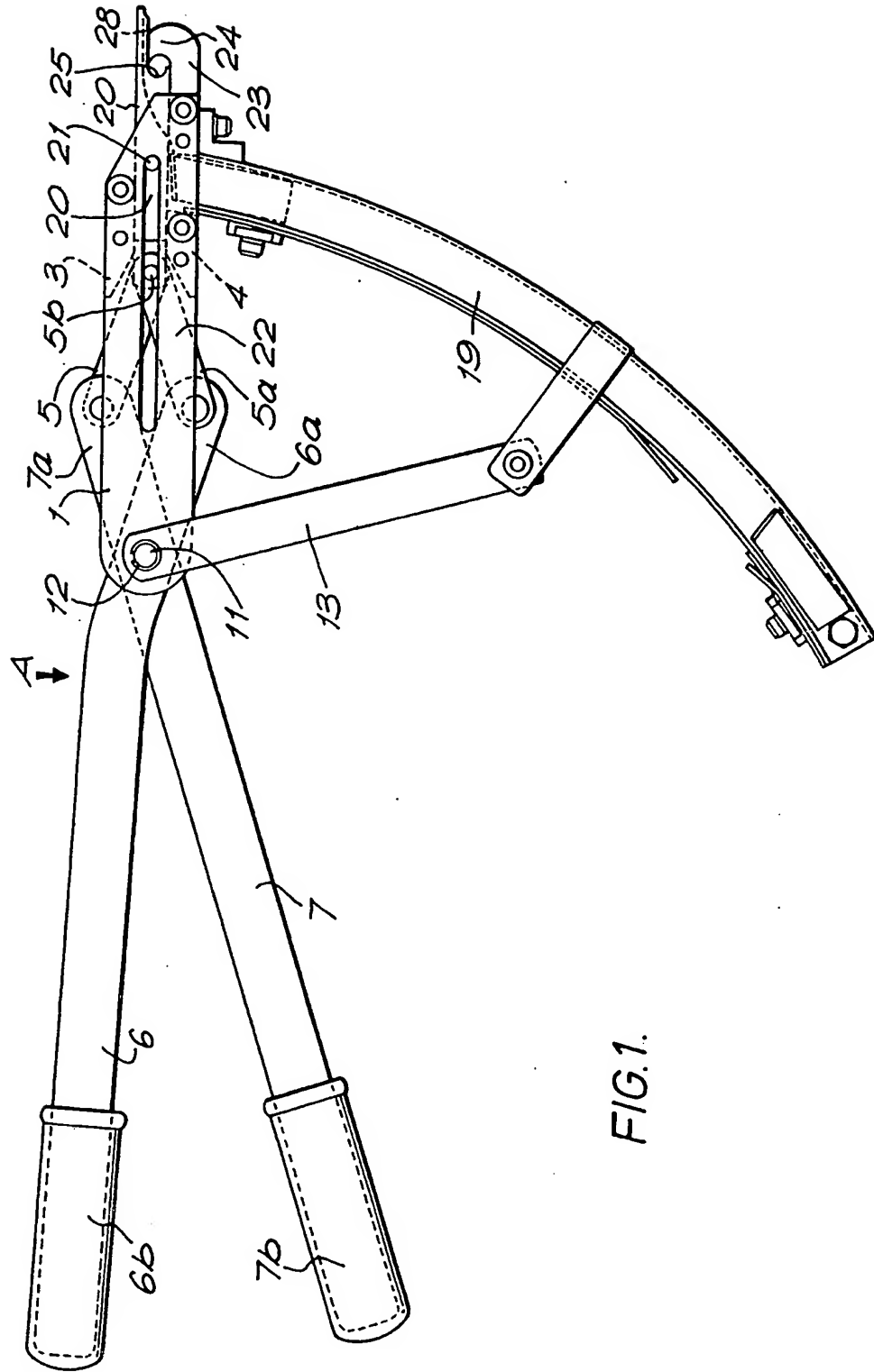


FIG.1.

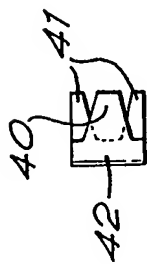
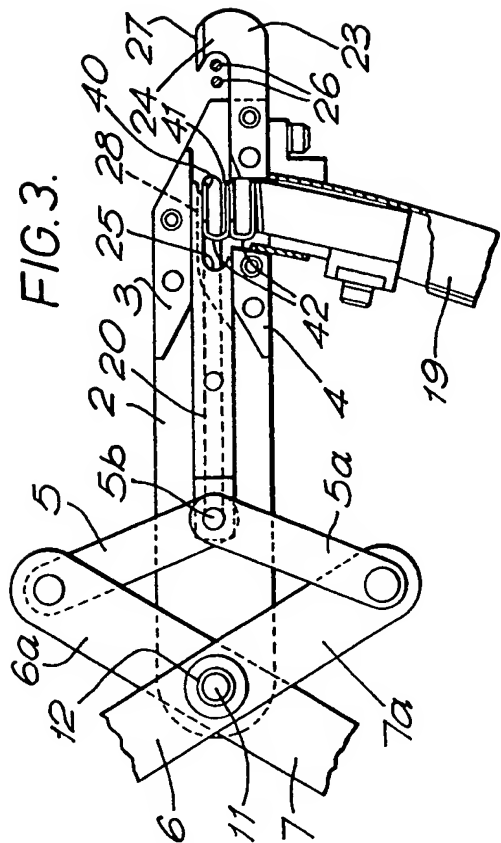
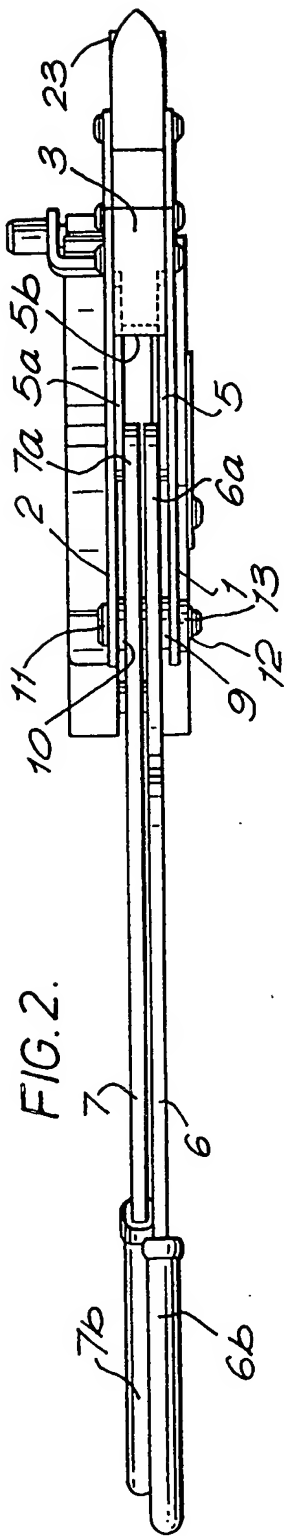


FIG. 4.

## SPECIFICATION

## Clip applying and clinching tools

5 This invention relates to an improved clip applying and clinching tool which is for use in connection with the application of a clip to secure together two single wires. The tool is intended to be used primarily but not essentially for securing welded or other mesh fencing to support wires. Such tools are known for example from GBP 1323459 wherein the construction is adapted for securing upholstery springing in a factory. This invention seeks to provide a hand operated and portable tool which can be used on site, particularly outdoors, for securing weldwire meshes or the like. The invention further seeks to provide a tool incorporating a magazine whereby a number of clips can be housed and fed sequentially for clinching.

According to this invention there is provided a tool for clinching a U-shaped clip member having parallel side limbs and an arcuately curved crown, the clip being clinched around a pair of wire members lying in parallel juxtaposed relationship with the limbs of the clip being deformed at their free ends so as to embrace the wires, the tool including a fixed jaw member and a movable jaw member between which a clip can be fed from a magazine, the movable jaw member being coupled through a linkage to relatively movable hand operable members which on application of force cause the movable jaw member to be moved towards the fixed jaw member so as to clinch a clip about the two parallel wires which are positioned to lie within the fixed jaw member.

Preferably two hand operable members are provided each movable about a pivot at one end of a body the other end of which carries the fixed jaw. The movable jaw is preferably coupled by means of linkages with the ends of the hand operable members with the body guiding the movable jaw, for example, by means of a pin and slot.

The body may include an extension to retain the magazine holding the clips.

The invention is described in more detail with reference to the accompanying drawings showing one embodiment by way of example and also showing preferred features in the construction of clip clinching tool.

In the drawings:

Figure 1 shows a clip clinching tool in side elevation,

Figure 2 shows the tool looking in direction of arrow A of Fig. 1,

Figure 3 is a detail view showing the fixed and movable jaws in the open position with a side plate removed, and

Figure 4 shows a clip prior to clinching.

Referring to Figs. 1 to 3 of the drawings the tool comprises two parallel side plate

members 1 and 2 forming the body which carries manually operable lever arms 6 and 7 both pivotally mounted on a bolt 11 secured by a circlip 12, the assembly including the interposition of spacers 9 and 10. The ends 6a and 7a of lever arms 6 and 7 are pivotally connected each to a toggle linkage 5, 5a of which the other ends are mounted on a pivot 5b at one end of a movable clinching jaw 20. The jaw 20 has a pin 21 towards one end and an extension of the pivot 5b forms a further pin at the other end, both pins sliding in slot 22 provided in the body part 2. The moving jaw 20 is laterally constrained by the side plates 1 and 2 and vertically constrained by guide members 3 and 4 (Fig. 3). Firmly secured between the two side plates 1 and 2 forming the body is a fixed jaw member 23 and this has an arcuately shaped hook like portion 24 which cooperates with an arcuately shaped recess 25 in the moving jaw 20 arranged so that when the two jaws are brought together they cause the side limbs 40, 41 of a clip 42 to be turned inwardly and to thus firmly embrace two wires 26 to be connected. When the jaws are brought together the outer portion 27 of jaw 24 forms a tongue which engages a groove 28 centrally positioned along the longitudinal axis of the fixed jaw 20. U-shaped clips 42 are fed into the moving jaw 25 when in the open position of Fig. 3 from a magazine 19 which is supported by a stay 13 secured by the bolt 11. The clips may be temporarily retained together by means of an adhesive tape joining their arcuate crown portions and the magazine 19 will include spring means so as to urge the clips towards the jaw recess 25.

The other ends of the lever arms 6 and 7 include handles 6b, 7b of plastics, as example, to enable them to be gripped and moved together to apply force to the jaws 20 and 23.

The invention provides a tool of simple construction for manual operation in the field for example when joining welded wire meshes or attaching single wires to welded wire meshes such as for fence cladding or the like. The clips for use with the tool and shown in Fig. 4 may be of the kind disclosed in GBP 1287088.

## CLAIMS

1. A tool for clinching a U-shaped clip member having parallel side limbs and an arcuately curved crown, the clip being clinched around a pair of wire members lying in parallel juxtaposed relationship with the limbs of the clip being deformed at their free ends so as to embrace the wires, the tool including a fixed jaw member and a movable jaw member between which a clip can be fed from a magazine, the movable jaw member being coupled through a linkage to relatively movable hand operable members which on appli-

cation of force cause the movable jaw member to be moved towards the fixed jaw member so as to clinch a clip about the two parallel wires which are positioned to lie within the fixed jaw member.

2. A tool according to Claim 1, wherein two hand operable members are provided movable about a pivot, scissors-fashion, the one ends of said members being adapted for hand gripping, the other ends being each connected to one end of a respective link, the other ends of the links being connected to the movable jaw member.

3. A tool according to Claims 1 or 2, wherein the fixed jaw member is provided at one end of a body, the movable jaw member being mounted within the body, the hand operable members being mounted on a pivot at the other end of the body.

4. A tool according to Claim 3 wherein the body comprises two spaced parallel plate members incorporating means to longitudinally guide and position the movable jaw member.

5. A tool according to Claim 4 wherein the side plates are secured together at one end by upper and lower guide members between which the movable jaw member is slidably guided.

6. A tool according to Claims 4 or 5 wherein the side plates are each slotted, a pin on the movable jaw member engaging said slots.

7. A tool according to any preceding Claim 4 to 6, wherein the ends of the links are pivotally connected to the movable jaw member through a pin which extends to engage the slots in the side plates.

8. A tool according to any preceding Claim 3 to 7, wherein the magazine comprises an arcuate tubular member extending from the body and housing a plurality of clips positioned in juxtaposed relationship with side limbs adjacent, the clips being urged towards the movable jaw member by spring means and arranged so that when the movable jaw member is at its maximum position from the fixed jaw member the clips may move upwards such that the topmost clip is positioned to be engaged by the movable jaw member on its forward stroke.

9. A tool according to any preceding Claim 2 to 8, wherein the magazine is held by a stay an end of which is supported about the pivot of the two hand operable members.

10. A tool according to Claim 1 wherein two hand operable members are provided each movable about a pivot at one end of a body, the other end of the body carrying the fixed jaw.

11. A tool in accordance with Claim 10 wherein the movable jaw is coupled by means of linkages with the ends of the hand operable members, the body forming a guide means for the movable jaw.

12. A tool for clinching a U-shaped clip

member as described herein and with particular reference to the drawings.

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